

5 *Supplement of*

# **World Atlas of late Quaternary Foraminiferal Oxygen and Carbon Isotope Ratios**

**Stefan Mulitza et al.**

*Correspondence to:* Stefan Mulitza (smulitza@marum.de)

10

## S1: Structure of netCDF files containing stable isotope data

<b>DIMENSIONS</b>		
<i>Name</i>	<i>Type</i>	<i>Description</i>
Length	int	Total number of rows/values for each proxy including NaNs
Character	int	Maximum number of characters needed for character array representing comments on individual rows

<b>VARIABLES</b>			
<i>Name</i>	<i>Type</i>	<i>Dimensions</i>	<i>Description</i>
Depth	double	Length	Sample depth in m
Sample Thickness	double	Length	Thickness of sample in m
Age	double	Length	Age in kyrs
d13C	double	Length	$\delta^{13}\text{C}$ in VPDB
d18O	double	Length	$\delta^{18}\text{O}$ in VPDB
d13C Err	double	Length	Error (SD) of $\delta^{13}\text{C}$ in ‰
d18O Err	double	Length	Error (SD) of $\delta^{18}\text{O}$ in ‰
d13C Corr	double	Length	Corrected $\delta^{13}\text{C}$ in VPDB
d18O Corr	double	Length	Corrected $\delta^{18}\text{O}$ in VPDB
Use Flag	double	Length	Flag indicating inclusion (1) or exclusion (0) of values from specific depths for further analysis
Comment	char	Length, Characters	Char array containing comments on individual sample depths

<b>GLOBAL ATTRIBUTES</b>		
<i>Name</i>	<i>Type</i>	<i>Description</i>
Core	char	Core label, cannot contain / or \
Species	char	Species name
Longitude	double	Longitude (in decimal notation)
Latitude	double	Latitude (in decimal notation)
Water Depth	double	Water depth in m
Proxy Category	char	Identifier set by PaleoDataView during import to Foraminiferal Isotopes
Device	char	Coring device
Record Type	char	Loose habitat identifier to distinguish frequently used species, sp = shallow planktic, sd = deep planktic, sb = shallow benthic, sd = deep benthic
Laboratory	char	Laboratory where measurements have been done
E-Paper	char	Optional path to pdf file on your harddisk, not set in this data base
Comment	char	General comment
Data Source	char	Source of data, i.e. doi
Reference	char	Reference
Oxygen Use Flag	double	Flag indicating inclusion (1) or exclusion (0) of the record into further analysis
Carbon Use Flag	double	Flag indicating inclusion (1) or exclusion (0) of the record into further analysis
O-Correction	double	Offset to be added to oxygen isotope values, generally set to 0 here
C-Correction	double	Offset to be added to carbon isotope values, generally set to 0 here
O-Correction Justification	char	Justification for correction of oxygen isotope values (i.e. lab offset or vital effect)
C-Correction Justification	char	Justification for correction of carbon isotope values (i.e. lab offset or vital effect)
Importer	char	Name of Importer
Optional	char	String that can contain user-defined parameter value pairs

## S2: Structure of netCDF files containing age data

<b>DIMENSIONS</b>		
<i>Name</i>	<i>Type</i>	<i>Description</i>
Length	int	Total number of rows/values for each Age value
Label Characters	int	Number of characters needed for laboratory label of the dating
Type Characters	int	Number of characters needed for type label of the dating (i.e. AMS)
Comment Characters	int	Number of characters needed for character array representing comments on individual rows

<b>VARIABLES</b>			
<i>Name</i>	<i>Type</i>	<i>Dimensions</i>	<i>Description</i>
Depth	double	Length	Sample depth in m
Sample Thickness	double	Length	Thickness of sample in m
Label	char	Label Characters	Lab ID of dated sample
Type	char	Type Characters	Type specifier of age determination, i.e. AMS for radiocarbon age
Age dated	double	Length	Raw radiocarbon age
Age +Error	double	Length	1 Sigma radiocarbon age error (+)
Age -Error	double	Length	1 Sigma radiocarbon age error (-)
Reservoir Age	double	Length	Total reservoir age
Reservoir Age Error	double	Length	Reservoir age error
Cal Age	double	Length	Calendar age
Cal Age Min	double	Length	95% Calendar age uncertainty (-)
Cal Age Max	double	Length	95% Calendar age uncertainty (+)
Use Flag	double	Length	Flag indicating inclusion (1) or exclusion (0) of values from specific depths for further analysis
Comment	char	Length, Comment Characters	Char array containing comments on individual sample depths

<b>GLOBAL ATTRIBUTES</b>		
<i>Name</i>	<i>Type</i>	<i>Description</i>
Core	char	Core label, cannot contain / or \
Parameter	char	Parameter name
Longitude	double	Longitude (in decimal notation)
Latitude	double	Latitude (in decimal notation)
Water Depth	double	Water depth in m
Proxy Category	char	Identifier set by PaleoDataView during import to Age
Device	char	Coring device
Laboratory	char	Laboratory where measurements have been done
E-Paper	char	Optional path to pdf on your harddisk, not set in this data base
Comment	char	General comment
Data Source	char	Source of data, i.e. doi
Reference	char	Reference
Use Flag		Flag indicating inclusion (1) or exclusion (0) of the record into further analysis
Importer	char	Name of Importer
Basin	char	Basin name
Filename	char	Filename (*.age)
Optional	char	String that can contain user-defined parameter value pairs

**S3: Previously unpublished or unavailable stable isotope records included in the data base**

Core	Latitude	Longitude	Depth	Species	Previously unavailable		Contributing PI/Reference
					$\delta^{13}\text{C}$	$\delta^{18}\text{O}$	
			(m)				
BS88-6-10B	-30.655	66.197	498	<i>Neogloboquadrina pachyderma sin</i>	x	x	Horwege, Spielhagen (unpublished)
BS88-6-12	-31.442	66.228	395	<i>Neogloboquadrina pachyderma sin</i>	x	x	Horwege, Spielhagen (unpublished)
BS88-6-13	-30.856	65.411	643	<i>Neogloboquadrina pachyderma sin</i>	x	x	Horwege, Spielhagen (unpublished)
BS88-6-14	-30.993	65.52	377	<i>Neogloboquadrina pachyderma sin</i>	x	x	Horwege, Spielhagen (unpublished)
BS88-6-16	-30.99	65.379	798	<i>Neogloboquadrina pachyderma sin</i>	x	x	Horwege, Spielhagen (unpublished)
BS88-6-17B	-30.992	65.32	997	<i>Neogloboquadrina pachyderma sin</i>	x	x	Horwege, Spielhagen (unpublished)
BS88-6-18	-30.453	65.376	796	<i>Neogloboquadrina pachyderma sin</i>	x	x	Horwege, Spielhagen (unpublished)
BS88-6-21	-29.533	65.576	598	<i>Neogloboquadrina pachyderma sin</i>	x	x	Horwege, Spielhagen (unpublished)
BS88-6-23	-29.535	65.459	996	<i>Neogloboquadrina pachyderma sin</i>	x	x	Horwege, Spielhagen (unpublished)
BS88-6-3	-31.066	67.41	624	<i>Neogloboquadrina pachyderma sin</i>	x	x	Horwege, Spielhagen (unpublished)
BS88-6-4	-31.071	67.366	626	<i>Neogloboquadrina pachyderma sin</i>	x	x	Horwege, Spielhagen (unpublished)
BS88-6-6	-30.895	67.079	668	<i>Neogloboquadrina pachyderma sin</i>	x	x	Horwege, Spielhagen (unpublished)
BS88-6-7	-30.872	67.071	688	<i>Neogloboquadrina pachyderma sin</i>	x	x	Horwege, Spielhagen (unpublished)
BS88-6-8	-29.683	66.452	299	<i>Neogloboquadrina pachyderma sin</i>	x	x	Horwege, Spielhagen (unpublished)
GeoB10038-4	-5.938	103.246	1891	<i>Cibicidoides wuellerstorfi</i>	x		Mohtadi (unpublished)
GeoB10038-4	-5.938	103.246	1891	<i>Globigerinoides ruber sensu stricto</i>	x		Mohtadi (unpublished)
GeoB10038-4	-5.938	103.246	1891	<i>Neogloboquadrina dutertrei</i>	x	x	Mohtadi (unpublished)
GeoB10038-4	-5.938	103.246	1891	<i>Neogloboquadrina dutertrei</i>	x		Mohtadi (unpublished)
GeoB10053-7	-8.677	112.872	1372	<i>Globigerina bulloides</i>	x		Mohtadi (unpublished)
GeoB10053-7	-8.677	112.872	1372	<i>Globigerinoides ruber sensu stricto</i>	x		Mohtadi (unpublished)
GeoB10069-3	-9.595	120.917	1250	<i>Globigerinoides ruber sensu stricto</i>	x		Mohtadi (unpublished)
GeoB1008-3	-6.582	10.319	3124	<i>Cibicidoides wuellerstorfi</i>	x	x	Govin (unpublished)
GeoB1008-3	-6.582	10.319	3124	<i>Uvigerina spp.</i>	x	x	Govin (unpublished)
GeoB1016-3	-11.771	11.682	3411	<i>Cibicidoides wuellerstorfi</i>	x	x	Govin (unpublished)
GeoB1016-3	-11.771	11.682	3411	<i>Uvigerina spp.</i>	x	x	Govin (unpublished)
GeoB12605-3	-5.573	39.108	195	<i>Globigerinoides ruber sensu stricto</i>	x		Kuhnert (unpublished)
GeoB12605-3	-5.573	39.108	195	<i>Neogloboquadrina dutertrei</i>	x		Kuhnert (unpublished)
GeoB13825-2	-37.279	-53.68	1233	<i>Angulogerina angulosa</i>	x	x	Bickert (unpublished)
GeoB16202-2	-1.908	-41.592	2248	<i>Globigerinoides sacculifer</i>	x	x	Freymüller (2013)
GeoB16202-2	-1.908	-41.592	2248	<i>Globigerinoides ruber pink</i>	x	x	Mulitza, Chiessi (unpublished)
GeoB16202-2	-1.908	-41.592	2248	<i>Neogloboquadrina dutertrei</i>	x	x	Huppertz (2014)
GeoB16202-2	-1.908	-41.592	2248	<i>Uvigerina peregrina</i>	x	x	Mulitza, Mackensen (unpublished)
GeoB16202-2	-1.908	-41.592	2248	<i>Globigerinoides ruber white</i>	x		Vahlenkamp, 2013
GeoB16224-1	6.656	-52.083	2510	<i>Cibicidoides wuellerstorfi</i>	x	x	> 3.38 m: Mulitza (unpublished)
GeoB16224-1	6.656	-52.083	2510	<i>Neogloboquadrina dutertrei</i>	x	x	Krummrei (2015)
GeoB1701-4	1.95	3.552	4162	<i>Globigerinoides ruber pink</i>	x	x	Mulitza (unpublished)
GeoB1704-4	-19.407	11.612	398	<i>Globorotalia inflata</i>	x		Mollenhauer (unpublished)
GeoB1712-4	-23.257	12.808	998	<i>Globigerina bulloides</i>	x	x	Mollenhauer (unpublished)
GeoB2019-1	-36.06	-8.778	3825	<i>Globigerina bulloides</i>	x	x	Mulitza (unpublished)
GeoB2021-5	-36.833	-14.403	3575	<i>Globigerina bulloides</i>	x	x	Mulitza (unpublished)
GeoB2104-3	-27.285	-46.373	1503	<i>Cibicidoides spp.</i>	x	x	Mulitza (unpublished)
GeoB2104-3	-27.285	-46.373	1503	<i>Uvigerina spp.</i>	x	x	Steinborn (2003)
GeoB2105-1	-26.742	-46.742	200	<i>Uvigerina spp.</i>	x	x	Steinborn (2003)
GeoB2106-3	-27.102	-46.515	497	<i>Uvigerina spp.</i>	x	x	Steinborn (2003)
GeoB2107-3	-27.177	-46.452	1048	<i>Cibicidoides spp.</i>		x	Rühlemann (unpublished)

Core	Latitude	Longitude	Depth	Species	Previously unavailable		Contributing PI/Reference
					$\delta^{13}\text{C}$	$\delta^{18}\text{O}$	
			(m)				
GeoB2107-3	-27.177	-46.452	1048	<i>Globigerinoides ruber white</i>		x	Rühlemann (unpublished)
GeoB2126-3	-21.272	-38.932	2539	<i>Cibicides spp.</i>	x	x	Govin (unpublished)
GeoB2126-3	-21.272	-38.932	2539	<i>Uvigerina peregrina</i>	x	x	Govin (unpublished)
GeoB3914-2	-38.227	-2.722	2463	<i>Cibicidoides wuellerstorfi</i>	x	x	Govin (unpublished)
GeoB4420-2	16.473	-46.463	2767	<i>Globigerinoides sacculifer</i>	x	x	Mulitza (unpublished)
GeoB4905-4	2.5	9.39	1328	<i>Globigerinoides sacculifer</i>	x	x	Zimmermann (2013)
GeoB5901-2	36.38	-7.071	574	<i>Globigerinoides ruber white</i>	x	x	Rühlemann (unpublished)
GeoB6211-2	-32.505	-50.243	657	<i>Uvigerina spp.</i>	x	x	Steinborn (2003)
GeoB6211-2	-32.505	-50.243	657	<i>Uvigerina bifurcata</i>	x	x	d18O < 0.92 and > 5.46 m, d13C Chiessi (unpublished)
GeoB6211-2	-32.505	-50.243	657	<i>Uvigerina peregrina</i>	x	x	Chiessi (unpublished)
GeoB6212-1	-32.687	-50.109	1010	<i>Uvigerina peregrina</i>	x	x	Mulitza, Chiessi (unpublished)
GeoB6213-2	-33.169	-49.561	1502	<i>Uvigerina spp.</i>	x	x	Chiessi, Mulitza (unpublished)
GeoB6340-2	-44.916	-58.096	2785	<i>Globorotalia inflata</i>	x	x	Mulitza (unpublished)
GeoB6340-2	-44.916	-58.096	2785	<i>Uvigerina spp.</i>	x	x	Mulitza (unpublished)
GeoB6403-3	-40.013	-23.365	4227	<i>Globigerina bulloides</i>	x	x	Donner (unpublished)
GeoB6405-6	-42	-21.853	3862	<i>Globigerina bulloides</i>	x	x	Donner (unpublished)
GeoB6408-4	-43.614	-20.441	3797	<i>Cibicidoides wuellerstorfi</i>	x	x	Donner (unpublished)
GeoB6408-4	-43.614	-20.441	3797	<i>Globigerina bulloides</i>	x	x	Donner (unpublished)
GeoB6412-2	-44.254	-17.647	3475	<i>Globigerina bulloides</i>	x	x	Donner (unpublished)
GeoB6421-2	-36.448	-22.445	4220	<i>Globigerina bulloides</i>	x	x	Donner (unpublished)
GeoB6425-2	-33.825	-23.587	4352	<i>Cibicidoides wuellerstorfi</i>	x	x	Donner (unpublished)
GeoB6910-2	-25.003	-44.427	1187	<i>Uvigerina spp.</i>	x	x	Steinborn (2003)
GeoB6914-2	-26.342	-43.547	2298	<i>Uvigerina spp.</i>	x	x	Steinborn (2003)
GeoB7010-2	8.57	-53.205	2549	<i>Cibicidoides wuellerstorfi</i>	x		Kuhr (2011)
GeoB8453-1	-25.473	13.608	505	<i>Oridorsalis umbonatus</i>	x	x	Rathmann, Mulitza (unpublished)
GeoB8453-1	-25.473	13.608	505	<i>Neogloboquadrina pachyderma sin</i>	x	x	Rathmann, Mulitza (unpublished)
GeoB8453-1	-25.473	13.608	505	<i>Globigerina bulloides</i>	x	x	Rathmann, Mulitza (unpublished)
GeoB9501-5	16.841	-16.733	323	<i>Globigerinoides ruber pink</i>	x	x	Mulitza/Kuhnert (unpublished)
GeoB9503-5	16.07	-16.65	50	<i>Globigerinoides ruber pink</i>	x	x	Mulitza (unpublished)
GeoB9506-1	15.61	-18.35	2956	<i>Cibicidoides wuellerstorfi</i>	x	x	Mulitza (unpublished)
GeoB9506-1	15.61	-18.35	2956	<i>Melonis barleanum</i>	x	x	Mulitza (unpublished)
GeoB9508-5	15.498	-17.948	2384	<i>Globigerinoides ruber pink</i>	x	x	Johnstone (unpublished)
GeoB9510-1	15.417	-17.653	1566	<i>Cibicidoides pachyderma</i>	x		Lynch-Stieglitz (unpublished)
GeoB9510-1	15.417	-17.653	1566	<i>Planulina wuellerstorfi</i>	x		Lynch-Stieglitz (unpublished)
GeoB9512-5	15.337	-17.367	793	<i>Cibicidoides pachyderma</i>	x		Lynch-Stieglitz (unpublished)
GeoB9512-5	15.337	-17.367	793	<i>Planulina wuellerstorfi</i>	x		Lynch-Stieglitz (unpublished)
GeoB9513-3	15.319	-17.294	494	<i>Cibicidoides pachyderma</i>	x		Mulitza (unpublished)
GeoB9516-5	13.673	-18.419	3504	<i>Cibicidoides wuellerstorfi</i>	x		Mulitza (unpublished)
GeoB9528-3	9.166	-17.663	3057	<i>Globigerinoides ruber pink</i>	x	x	Gemmeke (2010)
GeoB9532-2	8.95	-14.89	317	<i>Globorotalia inflata</i>	x	x	Huang, Mulitza (unpublished)
GeoB9532-2	8.95	-14.89	317	<i>Globobulimina turgida</i>	x	x	Huang, Mulitza (unpublished)
GeoB9532-2	8.95	-14.89	317	<i>Planulina ariminensis</i>	x	x	Huang, Mulitza (unpublished)
GeoB9532-2	8.95	-14.89	317	<i>Globigerinoides ruber pink</i>	x	x	Huang, Mulitza (unpublished)
GeoB9532-2	8.95	-14.89	317	<i>Uvigerina peregrina</i>	x	x	Huang, Mulitza (unpublished)
GeoB9533-2	8.93	-14.91	384	<i>Globorotalia inflata</i>	x	x	Huang, Mulitza (unpublished)
GeoB9533-2	8.93	-14.91	384	<i>Globobulimina turgida</i>	x	x	Huang, Mulitza (unpublished)
GeoB9533-2	8.93	-14.91	384	<i>Planulina ariminensis</i>	x	x	Huang, Mulitza (unpublished)

Core	Latitude	Longitude	Depth	Species	Previously unavailable		Contributing PI/Reference
					$\delta^{13}\text{C}$	$\delta^{18}\text{O}$	
			(m)				
GeoB9533-2	8.93	-14.91	384	<i>Globigerinoides ruber pink</i>	x	x	Huang, Mulitza (unpublished)
GeoB9533-2	8.93	-14.91	384	<i>Uvigerina peregrina</i>	x	x	Huang, Mulitza (unpublished)
GeoB9534-5	8.9	-14.94	492	<i>Globorotalia inflata</i>	x	x	Huang, Mulitza (unpublished)
GeoB9534-5	8.9	-14.94	492	<i>Globobulimina turgida</i>	x	x	Huang, Mulitza (unpublished)
GeoB9534-5	8.9	-14.94	492	<i>Planulina ariminensis</i>	x	x	Huang, Mulitza (unpublished)
GeoB9534-5	8.9	-14.94	492	<i>Globigerinoides ruber pink</i>	x	x	Huang, Mulitza (unpublished)
GeoB9534-5	8.9	-14.94	492	<i>Uvigerina peregrina</i>	x	x	Huang, Mulitza (unpublished)
GeoB9535-4	8.876	-14.961	669	<i>Globobulimina turgida</i>	x	x	Huang, Mulitza (unpublished)
GeoB9535-4	8.876	-14.961	669	<i>Planulina ariminensis</i>	x	x	Huang, Mulitza (unpublished)
GeoB9535-4	8.876	-14.961	669	<i>Uvigerina peregrina</i>	x	x	Huang, Mulitza (unpublished)
GeoB9624-1	20.511	-20.659	3894	<i>Globigerinoides ruber pink</i>	x	x	Bickert (unpublished)
GeoB9624-1	20.511	-20.659	3894	<i>Globigerinoides ruber white</i>	x		Bickert (unpublished)
IOW226660-5	-24.108	12.765	1821	<i>Globigerina bulloides</i>	x		Mollenhauer (unpublished)
IOW226660-5	-24.108	12.765	1821	<i>Cibicidoides spp.</i>	x		Mollenhauer (unpublished)
IOW226920-3	-22.45	12.36	1683	<i>Cibicidoides spp.</i>	x		Mollenhauer (unpublished)
M35003-4	12.09	-61.243	1299	<i>Globorotalia truncatulinoides (dex)</i>	x	x	Mulitza (unpublished)
MD09-3259	-4.606	-36.646	872	<i>Cibicidoides spp.</i>	x	x	Govin (unpublished)
MW9109-36BC	0	158	2320	<i>Globigerinoides sacculifer</i>		x	Lynch-Stieglitz (unpublished)
MW9109-36BC	0	158	2320	<i>Pulleniatina obliquiloculata</i>		x	Lynch-Stieglitz (unpublished)
MW9109-44GGC	0	161	3160	<i>Globigerinoides sacculifer</i>		x	Lynch-Stieglitz (unpublished)
MW9109-48GGC	-0.075	161.003	3397	<i>Globigerinoides sacculifer</i>	x	x	Lynch-Stieglitz (unpublished)
MW9109-51BC	-0.02	161	3411	<i>Globigerinoides sacculifer</i>	x	x	Lynch-Stieglitz (unpublished)
MW9109-55GGC	-0.014	161.773	4024	<i>Globigerinoides sacculifer</i>	x	x	Lynch-Stieglitz (unpublished)
MW9109-55GGC	-0.014	161.773	4024	<i>Pulleniatina obliquiloculata</i>	x	x	Lynch-Stieglitz (unpublished)
ODP1078C	-11.921	13.4	426	<i>Bolivina dilatata</i>	x		Mulitza (unpublished)
ODP1078C	-11.921	13.4	426	<i>Globigerinoides ruber pink</i>	x	x	Mulitza (unpublished)
ODP1078C	-11.921	13.4	426	<i>Uvigerina spp.</i>	x	x	Mulitza (unpublished)
ODP1084	-25.514	13.028	1992	<i>Globigerina bulloides</i>	x	x	Mollenhauer (unpublished)
PS2458-4	78.167	133.398	983	<i>Neogloboquadrina pachyderma sin</i>	x		Spielhagen (unpublished)
PS1308-3	80.013	-4.837	1458	<i>Neogloboquadrina pachyderma sin</i>	x	x	Spielhagen (unpublished)
PS1519-12	81.79	31.502	3002	<i>Neogloboquadrina pachyderma sin</i>	x	x	Horwege, Spielhagen (unpublished)
PS1704-4	78.385	1.075	1212	<i>Neogloboquadrina pachyderma sin</i>	x	x	Horwege, Spielhagen (unpublished)
PS1706-1	74.25	-10.058	3011	<i>Cibicidoides wuellerstorfi</i>	x	x	Horwege, Spielhagen (unpublished)
PS1706-1	74.25	-10.058	3011	<i>Neogloboquadrina pachyderma sin</i>	x	x	Horwege, Spielhagen (unpublished)
PS1707-1	72.617	-13.84	2118	<i>Cibicidoides wuellerstorfi</i>	x	x	Horwege, Spielhagen (unpublished)
PS1707-1	72.617	-13.84	2118	<i>Neogloboquadrina pachyderma sin</i>	x	x	Horwege, Spielhagen (unpublished)
PS1708-1	71.812	-12.567	1298	<i>Neogloboquadrina pachyderma sin</i>	x	x	Horwege, Spielhagen (unpublished)
PS75 072-4	-57.559	-151.219	3099	<i>Neogloboquadrina pachyderma sin</i>	x		Tiedemann, Lembke-Jene (unpublished)
PS75 073-2	-57.204	-151.611	3234	<i>Neogloboquadrina pachyderma sin</i>	x		Tiedemann, Lembke-Jene (unpublished)
PS75 085-1	-61.94	-160.118	3734	<i>Neogloboquadrina pachyderma sin</i>	x		Tiedemann, Lembke-Jene (unpublished)
RC16-59	4	-43	3500	<i>Globigerinoides sacculifer</i>	x	x	Lynch-Stieglitz (unpublished)
SK218 1	14.034	82.002	3307	<i>Globigerinoides ruber white</i>	x		Govil, Kuhnert, Naidu, Mulitza (unpublished)
SO189-119KL	3.518	96.315	808	<i>Globigerinoides ruber sensu stricto</i>	x		Mohtadi (unpublished)
SO189-144KL	1.155	98.066	481	<i>Globigerinoides ruber sensu stricto</i>	x		Mohtadi (unpublished)
SO189-39KL	-0.79	99.909	517	<i>Globigerinoides ruber sensu stricto</i>	x		Mohtadi (unpublished)
SO213-59-2	-45.829	-116.879	3161	<i>Globorotalia inflata</i>	x		Nürnberg (unpublished)
SO213-59-2	-45.829	-116.879	3161	<i>Globigerina bulloides</i>	x		Nürnberg (unpublished)

Core	Latitude	Longitude	Depth	Species	Previously unavailable		Contributing PI/Reference
					$\delta^{13}\text{C}$	$\delta^{18}\text{O}$	
			(m)				
SO213-59-2	-45.829	-116.879	3161	<i>Globorotalia truncatulinoides (dex)</i>	x		Nürnberg (unpublished)
SO225-08-3	-7.198	-165.054	3589	<i>Globigerinoides ruber</i>	x		Nürnberg (unpublished)
SO225-08-3	-7.198	-165.054	3589	<i>Globigerinoides sacculifer</i>	x		Nürnberg (unpublished)
SO225-08-3	-7.198	-165.054	3589	<i>Globorotalia tumida</i>	x		Nürnberg (unpublished)
SO225-53-3	-13.52	-162.138	3152	<i>Globorotalia crassaformis</i>	x		Nürnberg (unpublished)
SO225-53-3	-13.52	-162.138	3152	<i>Globigerinoides sacculifer</i>	x		Nürnberg (unpublished)
SO225-53-3	-13.52	-162.138	3152	<i>Globigerinoides ruber</i>	x		Nürnberg (unpublished)
SO225-53-3	-13.52	-162.138	3152	<i>Globorotalia truncatulinoides (dex)</i>	x		Nürnberg (unpublished)
V20-234	5.317	-33.03	3133	<i>Globigerinoides sacculifer</i>	x	x	Lynch-Stieglitz (unpublished)
V27-180	3.333	-21	4468	<i>Globigerinoides sacculifer</i>	x	x	Lynch-Stieglitz (unpublished)
V29-9	-2.85	83.133	2898	<i>Cibicidoides spp.</i>	x	x	Lynch-Stieglitz (unpublished)

## References

- Freytmüller, J.: Eine hochauflösende planktische Isotopenaufzeichnung des 'Heinrich Event 1' im tropischen Südamerika, Bachelorarbeit, Fachbereich Geowissenschaften, Universität Bremen, Bremen, 40 pp., 2013.
- 5 Gemmeke, B.: Spätquartäre Variationen der Sauerstoffisotopen-Zusammensetzung des Oberflächenwassers im östlichen tropischen Nordatlantik, Bachelorarbeit, Fachbereich Geowissenschaften, Universität Bremen, Bremen, 39 pp., 2010.
- Huppertz, N.: Variability of surface water stratification offshore Brazil over the past 25 ka, Master Thesis, Fachbereich Geowissenschaften, Universität Bremen, Bremen, 35 pp., 2014.
- Krummrei, M.: Spätquartäre Schichtung des Oberflächenwassers im westlichen tropischen Atlantik, Bachelorarbeit, Fachbereich
- 10 Geowissenschaften, Universität Bremen, Bremen, 31 pp., 2015.
- Kuhr, J.: Spätquartäre Niederschlagsveränderungen im Amazonasbecken: Einfluss von Sonneneinstrahlung und Ozeanzirkulation, Masterarbeit, Fachbereich Geowissenschaften, Universität Bremen, Bremen, 58 pp., 2011.
- Steinborn, W.: Rekonstruktion der glazialen Wassermassenstratifizierung im westlichen subtropischen Südatlantik (Sao Paulo Plateau), Diplomarbeit, Fachbereich Geowissenschaften, Universität Bremen, Bremen, 55 pp., 2003.
- 15 Vahlenkamp, M.: The Anatomy of Heinrich Event 1 – A Multiproxy Study of Centennial to Millennial Scale Climate Change off Brazil, Master Thesis, Fachbereich Geowissenschaften, Universität Bremen, Bremen, 70 pp., 2013.
- Zimmermann, R.: Spätquartäre Geschichte der Oberflächenstratifizierung im Golf von Guinea anhand des Schwerelotkernes GeoB 4905-4, Bachelorarbeit, Fachbereich Geowissenschaften, Universität Bremen, Bremen, 2013.

#### **S4: Species categorisation used in Figure 5 and 6**

**Cibicides/Cibicidoides spp.:** *Cibicidoides wuellerstorfi*, *Fontbotia wuellerstorfi*, *Cibicidoides cf. wuellerstorfi*, *Cibicidoides spp.*, *Cibicides floridanus*, *Cibicides spp.*, *Cibicidoides pachyderma*, *Planulina wuellerstorfi*, *Cibicidoides spp.*, *Cibicides mckannai*, *Cibicidoides kullenbergi/Cibicidoides wuellerstorfi*, *Cibicidoides kullenbergi*, *Cibicidoides wuellerstorfi/Cibicidoides kullenbergi*, *Cibicides wuellerstorfi*,  
5 *Cibicidoides wuellerstorfi/Cibicidoides sp.*, *Cibicides lobatulus*, *Cibicidoides sp.*, *Cibicides pachyderma*, *Cibicides sp.*, *Cibicides kullenbergi*, *Cibicidoides mundulus*, *Cibicidoides lobatulus*, *Cibicidoides kullenbergi/Planulina wuellerstorfi*, *Cibicidoides pachyderma/Planulina wuellerstorfi*, *Cibicidoides mabahethi*, *Cibicides corpulentus*, *Cibicides cicatricosus*, *Cibicides wuellerstorfi mixed*, *Cibicides wuellerstorfi dextral*, *Cibicides wuellerstorfi sinistral*, *Cibicidoides wuellerstorfi dextral*, *Cibicidoides wuellerstorfi sinistral*, *Cibicidoides cicatricosus*, *Cibicidoides robertsonianus*

10

**Uvigerina spp.:** *Uvigerina akitaensis*, *Uvigerina angulsoa*, *Uvigerina auberiana*, *Uvigerina bifurcata*, *Uvigerina excellens*, *Uvigerina hollicki*, *Uvigerina peregrina*, *Uvigerina semiornata*, *Uvigerina senticosa*, *Uvigerina sp.*, *Uvigerina spp.*

**Other benthics:** *Cibicidoides pachyderma/Planulina sp./P. ariminensis*, *Cibicidoides wuellerstorfi/Nuttalides umbonifera*, *Planulina ariminensis*  
15 *and Cibicidoides spp.*, *Planulina ariminensis/Cibicidoides pseudoungerianus*, *Globobulimina affinis*, *Globobulimina turgida*, *Globobulimina spp.*, *Globobulimina pacifica*, *Cassidulina laevigata*, *Cassidulina neoteretis*, *Cassidulina biora*, *Cassidulina teretis*, *Melonis barleeanum*, *Melonis barleeanus*, *Melonis sp.*, *Melonis zaandami*, *Melonis affinis*, *Bolivina dilatata*, *Bolivina argentea*, *Bulimina aculeata*, *Bulimina marginata*, *Elphidium batialis*, *Gyroidinoides spp.*, *Gyroidina altiformis*, *Oridorsalis umbonatus*, *Oridorsalis tener*, *Planulina ariminensis*, *Planulina foveolata*, *Planulina robertsonienseis*, *Planulina rugosus*, *Planulina spp.*, *Hoeglundina elegans*, *Angulogerina angulosa*, *Creseis acicula*, *Creseis*  
20 *virgula*, *Epistominella exigua*, *Pyrgo murrhina*, *Pullenia bulloides*, *Nuttalides*, *Nuttalides umbonifera*, *Benthic foraminifera*

**Globigerinoides ruber:** *Globigerinoides ruber*, *Globigerinoides ruber pink*, *Globigerinoides ruber sensu stricto*, *Globigerinoides ruber sensu lato*, *Globigerinoides ruber white*

25 **Globigerinoides sacculifer:** *Globigerinoides sacculifer*, *Globigerinoides sacculifer sac*, *Globigerinoides sacculifer trilobus*, *Trilobatus sacculifer*

**Globigerina bulloides:** *Globigerina bulloides*



***Neogloboquadrina pachyderma***: *Neogloboquadrina pachyderma*, *Neogloboquadrina pachyderma sinistral*, *Neogloboquadrina pachyderma dextral and/or sinistral*, *Neogloboquadrina pachyderma dextral*, *Neogloboquadrina pachyderma dextral and or sinistral*, *Neogloboquadrina incompta*

- 5 **Other planktics**: *Globorotalia crassaformis*, *Globorotalia inflata*, *Globorotalia menardii*, *Globorotalia tumida*, *Globorotalia truncatulinoides*, *Globorotalia truncatulinoides sin*, *Globorotalia truncatulinoides (right)*, *Globorotalia truncatulinoides sinistral*, *Globorotalia truncatulinoides dextral*, *Turborotalita quinqueloba*, *Neogloboquadrina dutertrei*, *Neogloboquadrina dutertrei dextral*, *Globigerinoides conglobatus*, *Pulleniatina obliquiloculata*

10